File ACT/003/007

Western States Minerals Corporation

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December 21, 1984

Ms. Susan Linner
State of Utah
Natural Resources and Energy
Oil, Gas, and Mining
355 W. North Temple
3 Triad Center
Salt Lake City, Utah 84180-1203

Re: Tug Mine

Dear Susan:

Attached please fine WSM's responses to comments prepared by your staff. We have attempted to deal with all your comments, but we are still preparing some data which will be forwarded to you when they are completed. In addition, as noted in the responses, we are awaiting laboratory analyses of the overburden material.

If you have any questions, please feel free to call.

Sincerely,

WESTERN STATES MINERALS CORP.

Bob Roggenthen

Bob Roggenthen
Project Mananger

BR/kae

Attachment

Western States Minerals Corporation

RESPONSES TO UTAH DOGM COMMENTS
LETTER OF OCTOBER 19, 1984

General Comments:

Variance on reclamation of the open pit.

Reply:

The proposed open pit for the TUG Project covers a total area of 13.8 acres that will be disturbed. The suggested reclamation of the small open pit uses procedures that are commmon in this part of Utah and have been used on other mining projects. This reclamation involves stabilizing the pit slopes and reducing hazards.

The stability of the pit slopes will be evaluated at the time of mining when insitu conditions of the rock structure can be determined . These tests are necesssary at the time of mining for pit safety and planning. The pit slopes are less than 45 and overall are no steeper than the planned natural rock terrain in close proximity to the site. If the material on the pit slopes is determined to be unstable, then action will be taken at the end of mining to stabilize either the slope or the material on it. In regards to the application for a variance on the pit slope, this is no longer required and should be deleted from the application.

With the proposed method of mining of the pit, no opportunity to backfill will exist until the pit is fully developed. The projected volume of waste rock is approximately 2 million tons. The re-excavation of this material at the end of the project for pit backfill is not economically feasible in terms of the projected project economics.

The feasiblity of backfilling this shallow pit is also considered not effective from a benefit standpoint to the proposed land use. The land use in this area is rangeland and wildlife habitat. This is an area of low rainfall (less than 6 inches) and the productivity from a rangeland standpoint is very poor. This range is rated at about 15 acres/AUM due to the low rainfall and predominance of black sagebrush and shrubs. Habitat loss of the grazing resource is not significant. Loss to the wildlife is also insignificant since the density and diversity of wildlife species is low and the area is not a known critical or important wildlife habitat, nor is hunting a major activity in the area.

Future mining of low-grade ore cannot be addressed at this time. The extent and location of any future mining is not known at the present time. If future mining is feasible, then the

reclamation of the proposed pit would be reconsidered in an amended permit that may involve placing overburden and waste into the presently proposed pit.

Other considerations suggested by the Utah DOGM were relocation of the waste rock pile closer to the pit. This is not feasible since portions of the surface around the mine is not under JV control, in addition, national policy requires that potential resources not be covered up or disturbed during a projects operations. The leach pads are to be reclaimed in place and will not be moved onto the waste rock dump. Moving materials from the waste rock dump will not reduce total disturbance on the site since disturbance will occur at the time of waste rock placement. Reduction of the waste dump size will decrease acreage to recieve topsoil, but suitable topsoiling material is available to adequately reclaim the acreage disturbed, and will not present a problem.

The reclamation of benches and haul roads in the pit itself will not significantly increase the amount of grazing land available in the area. As discusssed above, the small size of the pit and its location away from developed water sources for cattle make any efforts to reclaim it not beneficial from an economic standpoint, and will not detract significantly from the resources of the region. An evaluation of the respective costs of several levels of reclamation will determine that there is no level of reclamation that can be justified on the basis of benefit to the proposed land use of rangeland and wildlife habitat. The most important consideration is from the public safety and hazards standpoint.

Comment: Rule M-3 (1) (e)

Surface water flow patterns.

Reply:

Control of surface runoff from the project areas and water control structures are designed to handle in excess of the anticipated 10-yr, 24-hour precipitation event of 1.7 inches. Small sediment control structures such as hay bale dams and small check dams will control runoff from the office and shop facilities in all minor drainages.

The Tecoma JV has determined that the main diversion ditch along the northern edge of the site as shown on Map 03302/01 should drain to the west around the western edge of the leach pad area to avoid mixing with runoff from the waste dump. The reversal in flow direction can be accomplished by starting the diversion ditch farther upslope from the eastern edge of the haul road from the mine and establishing a gradient to the west of not more than 1%. The ditch design would remain the same, with a 10 ft minimum bottom width and a minimum depth of 3 ft with 2 ft of

freeboard, to handle a runoff volume of 18.6 ac-ft and a discharge of 96 cfs. This flow corresponds to a 25 year, 24 hour precipiation event.

The natural drainage to the east of the waste dump could then be used to collect runoff from the waste dump with a collection ditch along the toe of the dump and to divert the runoff into a sediment pit. This would reduce the size of the sediment pit needed and eliminate the possibility that runofff from the dump would mix with runoff from the 800 acre watersheds above operations.

Comment: Rule M-10

Reply:

The post-mining land use of open pit would be non-productive for the foreseable future. The loss in productivity as rangeland, its present land use, would be less than one AUM as discussed in the reply to the General Comments. The alternative of leaving the open pit as a wildlife (and stock) pond as suggested by the DOGM would partially offset the loss of rangeland. This area has no ponds or developed surface water sources in the immediate vicinity. The JV partners will, if possible, develop the bottom of the open pit as a stock and wildlife watering pond.

Comment: Public Safety and Welfare - (d) of (3)

Berm around the open pit.

Reply:

The JV partners agree to design and construct a berm around the open pit as requested by the DOGM. The berm will be sufficient to prevent entry of off-road vehicles into the open pit. Signs will be placed at appropriate intervals warning of the hazard.

Comment:

Slopes of the waste rock dump.

Reply:

The faces and sides of the dump will be placed to blend with the surrounding terrain. The JV partners do not think that short face sections of the waste dump are different in visual appearances from the steep neighboring hills and buttes in the area that are composed of chert and jasperoid rock outcrop. The dump is not easily visible and will be located more than four miles from the nearest highway and there are no houses or population centers within sight of the project. There are no traveled dirt roads that lead onsite or that run past the site. The travel and use in the area is for range cattle access and access to the mining and exploration prospects to the north and west of the site. The face

of the dump will be stabilized as necessary by walking down the slope with a tracked vehicle to prevent sloughing. As the method of waste rock placement involves the continued development of the front face of the dump, final readjustment will be performed at the end of the project.

Comment: Highwalls

Stability of benches in the open pit.

Reply:

The JV operations in the open pit are required by MSHA regulations to insure that the benches and faces in the open pit are stable, and that rock slopes have both short-term and long-term stability. The operations will insure, by appropriate pit analysis of rock structures and characteristics as mining proceeds, that the slopes and benches as designed are stable. Tests will be conducted on rock mechanics and on the in-place rock fracture and bedding systems in the pit area as mining proceeds.

The pit is designed with only 1850 ft of 20 ft high slopes at four levels separated by 40 ft wide benches and as such, does not have a highwall that exceeds 45 degrees. The overall slope on the east side of the pit at the steepest portion is 36 degrees. This slope can be adjusted as mining proceeds for stability. This slope will also be analyzed based on in-pit rock analysis for ability to withstand a seismic coefficient in Zone 3 conditions.

The potential for minor ravelling of bench faces in the event of a major earthquake exists; however, this ravelling will be contained upon the 40 ft interbench terraces.

The JV partners withdraw the request for a variance on the pit highwall. This slope is 36 degrees at its steepest portion and can be stabilized by blasting and grading those sections that are determined to constitute a potential long-term hazard for slope failure.

Comment: Roads and Pads

Reclamation of the haul road into the pit.

Reply:

The reclamation of all haul roads including the road into the pit has already been included in the reclamation and have been costed. The road into the pit will be graded to reduce erosion along the road and left as access to the proposed stock and wildlife pond in the pit. The road at the edge of the pond will be at a gradient to allow easy access and exit from the pond for game and livestock.

Comment: Drainages

Interception of runoff by excavation of the pit.

Reply:

Excavation of the open pit will intercept two drainages to the north and northeast of the pit. These drainages total about 100 acres of the diffuse pattern of drainages upslope on the east side of the watershed above the project. Construction of a safety berm along the northeast edge of the open pit will divert runoff across the low saddle at 5238 ft, behind the small knoll and into the drainage that flows east and away from the eastern edge of the pit and away from the waste dump. When mining is finished, the diversion can be made permanent, or can be breached if the decision is to establish a pond in the bottom of the pit.

RULE M-10 (14)

1. Comment:

Soils stripping on the mine site.

Reply:

All suitable and available soils on the mine site will be stripped and stockpiled for reclamation. A careful examination of the site will be made prior to start of stripping and depths and areas flagged for topsoil stripping. It is estimated that eight inches can be stripped on 5.5 ac from the side slopes and twenty inches from 4.5 ac in the draw on the mine site. The ridge along the southwest edge of the proposed pit is mostly rock outcrop and has no salvageable soil. The estimated volume of soil that can be salvaged is given in the revised Table S-1 and on the soils stripping plan map.

2. Comment:

Baseline data on organic matter, nitrogen, phosphorus and potassium.

Reply:

These nutrient parameters will be tested on soils from the mine site, still presently on hand, and from two composited soil samples from the waste/leach area to be collected onsite. The results of these tests will be forwarded to the DOGM around the end of November???????

3. Comment:

Map and Table showing soil depths and volumes of topsoil to be salvaged.

Reply:

The topsoil stripping map and topsoil stockpiles volumes have been revised to balance the volumes and depths of soil stripped. The revisions make the estimated volumes of topsoil stripped compatible with the depths of strippable topsoil recommended in the soils reports. A revised Table S-1 and "Soils Stripping Plan" map are furnished with these responses.

4. Comment:

Soil storage plan.

Reply:

The soil stockpiles should not receive contamination in their present locations either from: 1) the mine, which is downwind of the topsoil stockpiles; 2) the roads which will have a gravel surface on the entrance road and surfaced with resistant material from the mine on the haul roads; 3) or from the leaching operations which have been designed to control any release of material. The soil stockpile to the southwest of the leach pads will be moved away from the leach pads, however, and shaped to prevent both erosion and contamination.

The depths and sizes of the topsoil stockpile have been computed to store the estimated volumes of topsoil stripped. Stockpile A, as shown on the revised "Soils Stripping Plan", has an area of 57,000 square feet (1.3 acres) and at a depth of 20 ft can store 42,000 yards cubed of soil. Stockpile B has an area of 205,000 square feet (4.7 acres) and, at a depth of 30 ft., can store 227,000 yards cubed of soil.